E&MJ METAL AND MINERAL MARKETS

WEEKLY MARKET INFORMATION ISSUED BY THE PUBLISHERS OF ENGINEERING AND MINING JOURNAL

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THIS WEEK IN THE MARKETS...

- **Aluminum output high—strikes possible? Sheet prices stir industry.**
- **Zinc prices up, mixed, in U.S. London 12c. Copper jumps in London.**

COPPER—32.870c per lb delivered

Copper pricings in the U.S. were low this week though a little higher than last week. Pricings outside the U.S. were up sharply.

Copper was still sold at 30c a lb in the U.S. Some was also sold at 31½c delivered and at 34.7c. Copper Institute data for September showed the effect of the copper strikes. October data in addition are likely to reflect the Braden strike—world output will probably be lower.

London spot copper reached £243½ (30½c) yesterday morning. Some analysts are surprised it did not hit this level earlier. Premiums for 265-lb wire bars in Europe went as high as £21 Tuesday. The premiums reflect the shortage of this most popular (in the U.S.) shape. There is also a sizeable premium on other forms including the 200-lb wire bar. Speculators are reported after all forms. Uncut cathodes have sold at as much as £8 over the LME.

The jump in the LME reflects the increasing concern over the strike-caused copper shortage. This is accompanied by buying some contracts in order to get any kind of copper. But some feel a squeeze is most important. Many shorts have had to cover. They are beginning to feel a drastic shortage is developing and that the exchanges may jump much higher. Some say there can be no relief for six weeks and maybe much longer.

Some factors are suggesting the bids on Chilean copper in Hamburg will be most significant.

ALUMINUM—primary pig 24.7c a lb del.; export 22.5c

Primary aluminum output in the U.S. in September according to the Aluminum Association was 168,205 short tons; on a daily average basis this is about equal to August's 172,817.

Some analysts suggest primary output has held up well in spite of a drop in demand. Others point out that for the past month or two doubt that steel would settle with labor has been increasing. The possibility there would be aluminum strikes has increased the longer steel negotiations continued. The aluminum industry agreement was that if steel reaches no settlement by Nov. 1, after ten days notice either side could take action. It might be wise to maintain primary at a good level in the face of this; and also to ship metal to fabricating plants and elsewhere.

Aluminum product sales felt the pinch as they returned to normal following the summer sales jump in anticipation of strikes. Though the steel shortage apparently has had almost no effect yet, some observers feel that in spite of a Taft-Hartley injunction it will come. The shortage has begun to hit products that use aluminum along with steel and the steel shortage will probably get worse for at least a month and maybe for two months. It will be a considerable period after the mills are opened before steel begins to flow. And the Commerce Dept. says it will take a number of weeks before the mills are going at a good rate. This assumes there is no slow-down by steel workers.

The excitement over recent aluminum sheet pricing has not died down. Though it is probably not on the agenda of the current Aluminum Association meetings in N.Y., it is a major topic of discussion at the informal meetings of attending company officials. Not only are the new prices far under those for specification sheet, some of which Alcoa suggests will be displaced, but also well under the lower utility sheet prices. Coiled utility sheet .016 inch thick is priced at 43.4c a lb; the new sheet of same thickness is 36.5c and for narrower widths is 37c. The differentials decrease with increasing thickness to about 4c a lb. Some buyers, not in the building product field, say they are investigating the feasibility of replacing various specification sheets with it.

Kaiser states its "specification sheet prices are firm and reduction from current published levels are not contemplated." But a spokesman said adjustments may be made in other products.

ZINC—Prime Western 12c and 13c per lb East St. Louis

Yesterday American Metal Climax raised zinc PW East St. Louis to 13c a lb. Some other sellers raised their quotations, but some stayed at 12c. The situation repeated that of exactly one month ago—very heavy sales were made at the lower price. No sales were reported at the higher price Wednesday.

London yesterday morning hit about 12c; at N.Y. this is about 13½c for import. Special High imports would be about 1c higher.

The LME jumped up as the increasing consumption in Europe took up most spot metal. Premiums on die-casting zinc had gone up so more zinc was diverted from galvanizing grades. It became scarce and the U.S. based demand for galvanized products, brought about by the shortage here, was probably instrumental in raising the LME.

LEAD—13c a lb, N.Y.

Lead sales this week were 2,326 tons, up slightly.

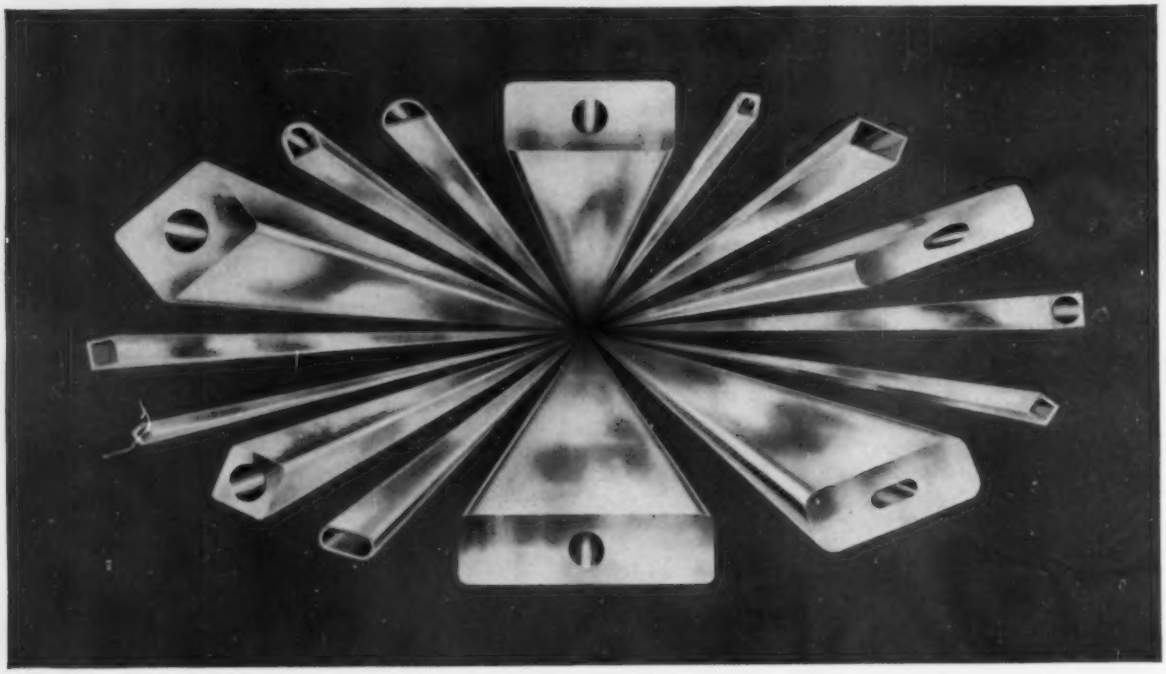
TIN—101.625c a lb, N.Y.

Prospect of a steel strike injunction has failed to stimulate buying interest. Observers feel warehouse stocks here will be adequate for what time is left of the 80-day period after furnaces are tuned up. Many see lack of worker incentive during the cooling-off period resulting in poor productivity.

IN THIS ISSUE . . .

September Copper Institute Figures ..... p. 3
Magnesium Growth Seen ..... p. 3
Watch These Trends ..... p. 7
Daily and Average Prices ..... p. 9

THE SHAPE OF THINGS TO COME WITH ANACONDA ELECTRICAL COPPER



Fluid-cooled copper conductors. The growing need for compact electrical assemblies which can handle high current densities is leading to an ever-increasing variety of hollow, fluid-cooled copper conductors. The samples shown about one-half full size above give some idea of the range of sizes and shapes produced by The American Brass Company.

Nuclear physics magnets are, perhaps, the most spectacular applications of fluid-cooled conductors. These hollow conductors range from tube .182" square O.D. x .083" square I.D. to heavy rectangular bars with a round core for water cooling.

Industrial applications. The use of fluid-cooled conductors is growing rapidly in large electrical equipment. Generator output can be greatly increased, without increasing frame size, by cooling stator and rotor bars. Fluid-cooled conductors are being used in heat sinks for rectifiers and induction furnace coils. Another interesting use is in compact water-cooled windings needed to provide very high flux densities in, for example, the ceramic magnet manufacturing process. These "solenoids" are being built for applications in which the current range is from a few hundred to about 2000 amperes.

Technical assistance. Whatever your problem —liquid-cooled field coils, rotor bars or a special-shape tubular conductor—technical specialists at The American Brass Company will gladly help you work out the size and shape best adapted to your needs. See your American Brass representative or write: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

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E&MJ METAL AND MINERAL MARKETS

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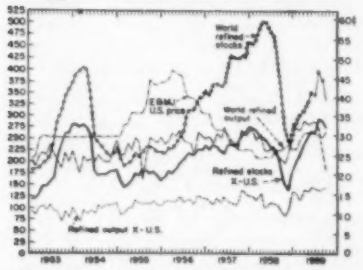
Copper Production and Stocks



Data, except price, are from the Copper Institute and are in thousands of short tons. They include September 1959. World refined output and stocks do not include the U.S.S.R., Japan, the Scandinavian countries, Australia, Yugoslavia, and the Mesina Mine in Transvaal. The two series "X-U.S." are the above world producer statistics less the U.S. No fabricator stocks are included.

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World Refined Copper Stocks Drop 39,524 Short Tons

Copper Institute data for September showed U.S. crude primary output, refined production and stocks down sharply. Deliveries to fabricators were up about 2,400 tons.

The figures for the world, including the U.S., did not appear to balance. World deliveries to fabricators were 232,282 short tons and production was 271,493 tons. This led some observers to conclude world refined stocks should have dropped by the difference, 60,789. Instead they dropped by 39,524 tons. The Copper Institute picks up all imports of refined copper into the U.S. The imports that are in the accounts of the reporting members of the Copper Institute are included in the deliveries to fabricator figures; those imports that are not accounted for by reports of members are added to the deliveries to fabricators. In September there were heavy deliveries by non-Institute members. Copper Institute figures are 21,265 tons in this category and this accounts for the failure for the figures to balance.

In the corresponding U.S. figures the difference is 33,570 tons. In the figures outside the U.S. there is an offsetting balance of 12,305 tons. This indicates 12,305 tons were brought into the U.S. by Institute members and 21,265 by others.

The non-Institute copper may be secondary metal from abroad as well as primary copper from firms that are not members.

Blister copper stocks rose 22,372 tons.

Copper Institute figures for August and September 1959 follow:

United States

Production:	Aug.	Sept.
Crude Primary .....(a)	51,327	19,166
Crude secondary ....(a)	3,994	6,577
Total .....(a)	55,321	25,743
Refined copper .....(a)	81,176	28,847
Deliveries refined .....(a)	90,123	92,501
Stock, end. ref'd .....(a)	91,608	61,524

Outside United States

Production:		
Crude primary .....(a)	181,617	167,048
Crude secondary	558	1,074
Total .....(a)	182,175	168,122
Refined copper .....(a)	142,276	142,646
Deliveries refined .....(a)	147,821	139,789
Stock, end. ref'd .....(a)	284,540	275,100

(a) Revised

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Confidence in Magnesium Growth Expressed at Annual Convention

"National consumption of magnesium will increase substantially," H. Y. Bassett, president of Calumet & Hecla Inc. has predicted.

Citing this as one of the major factors in the establishment of Alabama Metallurgical Corp. as a magnesium producer at Selma, Ala., Bassett, speaking at the 15th Annual Convention of The Magnesium Association held at the Hotel Roosevelt October 19-20, added:

"We talked to dozens of major users. About nine out of 10 were highly optimistic about the future growth of the magnesium market. They told us that with a stepped up general promotion of the metal and its alloys, the present annual consumption could be substantially increased. There was general agreement that with the acceleration of military programs, an increasing production of missiles and a growing use in civilian applications, continuation of the long-term upward trend in the industry is inevitable."

Dr. W. F. Higgins of Magnesium Elektron Ltd., a leading British authority on magnesium, endorsed present protective finishing methods, despite the tendency of some engineers to seek a universal panacea for all finishing problems. He said that manufacturers should ". . . apply the process we already have available rather than to seek for new ones. The user of magnesium is too fond of specifying a process which he has been told is "the best" without considering whether it is quite appropriate to his problem or adaptable to his needs. We have plenty of protective schemes for magnesium and the real need is to learn to turn them to best account. Instead of seeking the one universal panacea, let us concentrate upon applying what we already know and turn all of our devices to good account as most appropriate, and I am convinced that magnesium alloys will not be found wanting in their resistance to corrosion or their usefulness to mankind."

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Fiscal Year Barter Activity Nearly Double Previous Period

Barter contracts valued at $62.5-million were negotiated by the Commodity Credit Corporation in the April-June 1959 quarter, compared with contracts valued at $59.6-million in the January-March 1959 quarter, a U.S. Department of Agriculture release revealed.

Contracts for the full fiscal year (July 1, 1958 – June 30, 1959) totaled approximately $158.1-million, compared with $65.1-million in the fiscal year 1958.

Barter contracts provide for the exchange on an equivalent value basis of CCC-owned agricultural commodities for strategic and other materials.

Agricultural commodities exported by barter contractors in the April-June 1959 quarter had an export market value of $58.1-million, compared with exports amounting to $33.5-million during the January-March 1959 quarter. Fiscal year 1959 exports were valued at $132.3-million against $99.6-million in the fiscal year 1958.

Materials delivered to CCC by contractors in the April-June 1959 quarter had a value of $62.3-million compared with $33.2-million for January-March. Fiscal year 1959 deliveries to CCC were valued at $174.3-million against $203.9-million in 1958.

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ABMS World Lead Data

U.S. (a) (c)

	1958 mo. av.	1959 July	1959 Aug.
Ref. Prod.	43,349	32,744	25,496
Ref. del. (b)	53,285	34,144	62,491
Stocks, end	252,466	200,608	182,938

Outside U.S. (a) (c)

Ref. Prod.	89,289	89,371	87,032
Ref. del. (b)	64,222	70,743	63,741
Stocks, end	81,999	120,846	124,251

(a) Includes lead content of antimonial lead.

(b) Excludes deliveries to U.S. Government stockpile. Changes in stocks do reflect shipments to stockpile.

(c) Data from American Bureau of Metal Statistics. Refer only to primary refineries but include lead produced by them from scrap. Primary refineries in the U.S., Canada, Australia, France, French North Africa, West Germany, Mexico and Peru report. Some material originating outside these countries but refined in them is included.

(d) Revised.

U.S. Stocks

	1957	1959 July	1959 Aug.
Refined	103,308	200,608	182,938
Base bullion			
At smelters (a)	6,247	7,009	9,637
At refinery (b)	30,705	31,461	24,994
Raw material (c)	75,962	51,091	49,262
Total	216,222	290,169	266,831

(a) and in transit. (b) and in process of refining. (c) at smelter.

U.S. Primary Smelter Receipts

	1958 mo. av.	1959 July	1959 Aug.
Primary			
Imported	15,951	11,799	2,703
U.S. origin	24,807	20,029	20,958
Scrap	2,423	2,065	1,428
Total	43,182	33,893	25,089

(Continued on page 5)

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U.S. Lead and Zinc Imports

Imports of lead and zinc for the fourth quarter of 1959 were the following, in short tons, at about 4 pm October 20, according to data from the U.S. Customs Bureau.

Lead Ore

Country	entered	quota
Australia	3,311	5,040
Canada	5,043	6,720
Peru	2,034	18,440
Bolivia	1,566	2,520
U. of S. Africa	3,422	7,440
Other	433	3,280

Lead Metal

Country	entered	quota
Australia	3,593	11,840
Canada	667	7,960
Peru	257	6,440
Mexico	8,508	18,440
Yugoslavia	2,780	7,880
Other	filled	3,040

Zinc Ore

Country	entered	quota
Canada	26,323	33,240
Mexico	9,899	35,240
Peru	1,830	17,560
Other	filled	8,920

Zinc Metal

Country	entered	quota
Canada	4,423	18,920
Mexico	117	3,160
Peru	227	1,880
Bel.-Lux.	196	3,760
Bel. Congo	0	2,720
Italy	filled	1,800
Other	filled	3,040

Miscellaneous Metals

Wholesale lots, (a) f.o.b. ship. pt.; (b) delivered; (c) f.o.b. N.Y.; (d) Dep. on size of lot; (e) dep. on grade; (n) nom.

ALUMINUM: lb (b) eff. 8-4-58, ingot:
99.50%.....26.8c 99.80%.....27.8c
99.75%.....27.3c 99.85%.....28.8c

ANTIMONY: dom, lb., Oct. 15-21
boxed N.Y. (c) 32.590c
bulk (a) 29c
boxed (a) 29½c
imported 10-ton lots, 99½%, duty pd..24½c
99% 24c

BERYLLIUM: 97%, (a), lb $71.50

BISMUTH: lb, ton lots $2.25

CADMIUM: lb (b) Oct. 15-21
Ton lots, Eff. Oct. 1, 1959 .....$1.30
Less than ton lots $1.40
See Oct. 8, 1959, p. 12

CALCIUM: lb, ton lots, slabs, etc. $2.05

CHROMIUM: (b) lb of material,
exo. 98.5%, .05%C, ...(d)$1.15-1.19
Elec. 99.8% .....(d)$1.15-1.19
Vacuum melting .....4c more

COBALT: lb, (c), eff. 2-1-59
500 lb lots $1.75
100 lb $1.77
less than 100 lb $1.82
fines $1.75

COLUMBIUM: lb. 99½%, (d)
roundels $36
rough ingots $50

GALLIUM: gr, 1000-gr lots $3.00

GERMANIUM: gr
1000-gr lots, 1st red .....34½-35c(a)
intrinsic .....35c(b)&37c(a)
10,000-gr lots, 1st red .....33c(a)
intrinsic .....35c(a)(b)

INDIUM: tr oz, 99.9%, small lots $2.25
over 5,000 oz $1.25-2.25

IRIDIUM: tr oz $75-80

LITHIUM: lb 99.5% $9-11

MAGNESIUM: lb (a) 10,000 lb lots,
pig ingot 99.8% 35¼c-36.65c
notched ingot 36c-37.45c

MANGANESE: lb (b) 95½%, carloads,
bulk 45c
packed 45¾c
elec (a) frt. allowed E. of Miss., 99.9%..34c
ton lots eff. 4-1-57 ..... 36c
prem for hydrogen removed .....¾c lb

MOLYBDENUM: (a) eff. 8-56
powder, carbon red $3.35

NICKEL: lb (a) duty included 74c
eff. 12-6-56
dealers 74c
powder (b) U.S. 74c
sinter (nickel content) point of entry,
eff. 7-14-58 .....69.6c

OSMIUM: oz (n) $70-90

PALLADIUM: tr oz eff. 3-6-59....$18-20

PLATINUM: tr oz $76-80
average $77

QUICKSILVER: flask, N. Y. $224-27

RADIUM: mg, Ra content $16-21½

RHODIUM: tr oz $122-125

RUTHENIUM: tr oz $55-60

SELENIUM: lb, 2-19-58, comm grade $7
high purity $9.50

SILICON: lb (a) eff. 6-1-59
98% max. .51-1.0% Fe, crushed 20.85c
lump 19c
Hyper-pure: (4-1-57) #1.....$360
#2.....$250
#3.....$160
solar cell (4-1-57) .....$ 90

SODIUM: lb, carloads 16½c

TANTALUM: per lb, (a) (e), powder $40-58.60
sheet (e) $50.35-59.18
rod (e) $73.04-80.23

TELLURIUM: lb $2.50

THALLIUM: lb $7.50

TITANIUM: lb (a) A-1 99.3%
max. .3% Fe $1.60
max. .5%, Fe. eff. 8-1-59 .....$1.50

TUNGSTEN: lb 98.8%
1000-lb lots .....$2.75-$2.90
Hydrogen red 99.99% $3.10-4.00
dep. on Fisher No. eff. 6-29-59

VANADIUM: lb, 90% V 100 lb lots..$3.45

ZIRCONIUM: lb (a) sponge, powder
platelets: low hafnium $7-14
comm.....$5-10

Metallic Ores

Tons of 2000 lb or units of 20 lb, unless otherwise stated. Short ton unit = stu; long ton unit = ltu. (a) c.i.f. U. S. ports, (b) f.o.b. ship pt., (c) f.o.b. mine or mill (g) depending on grade, (i) import duty extra, (n) nominal, (t) term contracts.

ANTIMONY ORE: stu of Sb:
50-55% ..... $2.25-$2.40
60% ..... $2.50-$2.60
65% lump ..... $3.10-$3.20

BERYLLIUM ORE: stu BeO, 10-12%
Dom. (c) – dep. on quan. ..... $46-$48
Imported (a), (t) ..... $34-$34.50
Spot (a) ..... $31.75-$32.50

CHROME ORE: lt, dry basis, subject to penalties if guarantees are not met, f.o.b. cars, Atlantic ports
Rhodesian: (t)
48% Cr_2O_3, 3 to 1 ratio ..... (n) $34-$35
48% Cr_2O_3, 2.8 to 1 ratio ..... (n) $30-$32
48% Cr_2O_3, no ratio ..... (n) $25-$26
South African (Transvaal):
48% Cr_2O_3, no ratio ..... (n) $24-$26
44% Cr_2O_3, no ratio ..... (n) $17.50-$18
Turkish (basis 48% 3 to 1):
48% Cr_2O_3, 3 to 1 ratio, lump and concentrates ..... (n) $36-$37
46% Cr_2O_3, 3 to 1 ratio, lump and concentrates ..... (n) $33.50-$34
Pakistan (Baluchistan):
48% Cr_2O_3, 3 to 1 ratio ..... (n)

COBALT ORE: lb Co, free market
10% ..... (n) 60c
11% ..... (n) 70c
12% ..... (n) 80c

COLUMBITE ORE: lb pentoxide, 65% Cb_2O_5 and Ta_2O_5
Ratio 10:1 ..... $1.10-$1.20
Ratio 8½:1 ..... $.95-$1.05

IRON ORE: lt, lower lake ports, Lake Superior ore 1959:
Bessemer
Mesabi 51½% Fe $11.60
Old Range $11.85
Non-Bessemer
Mesabi 51½% Fe $11.45
Old Range $11.70
Eastern ores, ltu, delivered, foundry and basic, 56-62% ..... (n)
Swedish (t) (a) 60-68% stu (g) ..... (n)
Brazilian (b) 68½% gross ton, premium for low P, 1-1-59 ..... $11
Smaller sellers $11

MANGANESE ORE: (a) (i) ltu.
Mn 46-48
Ind. Fe 10, P.15, Al+Si 13 ..... (n) 87c-90c
S. Af. Fe 9, P.05, Al+Si 13 ..... (n) 87c-90c
Mn 48-50, Braz. Fe 5, P.1, Al+Si 7, As .2 ..... (n) 91c

MOLYBDENUM ORE: lb cont. Mo.: 95% MoS_2 (b): (eff. 1.1.58)
Climax, cost of container extra $1.25
Molybdic trioxide MoO_3, bags (b) $1.46
cans $1.47

TITANIUM ORE: ilmenite, gross tons TiO_2, 59½% f.o.b. cars, Atlantic ports ..... $23-$26
54% f.o.b. cars ..... $21-$21.50
Rutile, 94% st. for del. within 12 mos. ..... (n) $85

TUNGSTEN ORE: stu WO_3 65% basis foreign ore, (i), nearby arrival
Wolfram $17
Scheelite $17
Low moly scheelite, higher
U.S. scheelite, stu. (c) ..... $22-$25
London, ltu, WO_3 good ore
Wolfram ..... (n) 125s

VANADIUM ORE: lb V_2O_5 cont (c):
Domestic 31c

ZIRCON ORE: (sand) lt, (a)
Atlantic:
65% ZrO_2 ..... $50
Domestic 66%, st, (b):
Jacksonville ..... no quote
Stark, Fla. $47.25

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Domestic Antimony Output Better; Imports Down

Domestic smelters produced 2,600 tons of primary antimony during the second quarter of 1959, according to the U.S. Bureau of Mines. This quantity was 24% more than that of the preceding quarter and considerably above the average quarterly output of 1958. Mine production was 161 tons.

Imports of antimony dropped 13% during the quarter. An increase in entries of oxide failed to offset declines in ores, concentrates and metal. As in previous reporting periods, Union of South Africa, Mexico and Bolivia were the leading contributors of ores and concentrates. Yugoslavia and the United Kingdom, respectively, were the leading exporters of metal and oxide.

Consumption of primary antimony rose sharply during the second quarter, conforming to the general increase in industrial activity. The estimated total use of antimony in all products was 4,100 tons compared to 3,000 tons in the first quarter. Nearly the entire gain was attributed to increased fabrication of metallic products, mainly battery grids.

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Lead Data

(Continued from page 3)

U.S. Lead Consumption (a)

	1958 mo. av.	1959 June	1959 July
Battery	25,639	30,992	30,274
Cable covering	6,211	5,791	3,183
Other met. products	24,671	30,787	27,724
Total met. products	56,521	67,570	61,181
Pigments	7,724	10,265	8,719
Tetraethyl	13,192	13,079	15,281
Other	2,428	2,889	2,385
Total	79,865	93,803	87,566

(a) Data from U.S. Bureau of Mines. Secondary lead is included. Excludes an amount, estimated by USBM at 2-3%, not reported to USBM.

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WATCH THESE TRENDS

Copper and Sunlight Heat Modern Homes

COPPER & THE SUN are teaming up in heating water for swimming pools, winter heating for homes and in cooling off the family residence during the hot summer nights. At Tucson, Ariz., for instance, the solar energy laboratory, recently completed by the Institute of Atmospheric Physics of the University of Arizona, incorporated a space heating-cooling system using solar energy for winter heating and net radiant exchange with the night sky for summer cooling. There are also summer experimental solar heated houses in New Mexico, California, Massachusetts, Colorado and New Jersey. Various copper solar units are employed in several states to heat water for homes and the family swimming pool.

The 1,440 sq ft solar lab at Tucson is designed to provide a comprehensive facility for the technical study of applied solar energy. The unique heating-cooling system for the building employs a specially designed copper roof which collects solar heat and dissipates heat drawn from inside to cool it in the summer. The structure contains 4,600 lb of copper—2,000 for the solar collector roof, 2,000 for the interior ceiling radiant panels and some 600 lb for piping.

Copper was selected because of its superior thermal conductivity, corrosion resistance and its ease of fabrication.

A specialist in the solar heating of swimming pools recommends stationary collector panels slanted to the south at about 30°. If the panels must be laid flat on a roof or hung vertically, some efficiency is lost. It can be regained by using more panels.

The development may lead to the volume erection of homes, heated and cooled with copper at a fraction of the cost of today's systems, according to the Copper & Brass Bulletin.

FUEL CELLS have been used to operate 4,000-lb capacity fork lift trucks, reports Yale & Towne Manufacturing Co. Elmer F. Twyman, senior vice president of Yale & Towne said "A major breakthrough is also near in the application of other chemical energy sources, as well as nuclear and solar energy, to power fork lift trucks.

STEEL DIES are being replaced by dies of a zinc-base forming alloy produced by Federated Metals Div. of American Smelting & Refining Co. Asarco claims the dies are tougher and require less frequent replacement than conventional dies.

ULTRAPURE metals for high temperature and nuclear application will be represented at the Metal Show at Chicago in November, reports the Wah Chang Corp. The samples will be of extra-high purity tungsten, molybdenum, tantalum, columbium, hafnium and zirconium.

A NEW GASOLINE additive — combining lead and manganese to form an effective anti-knock compound is announced by Ethyl Corp. (See Trends, June 18). The new compound, Motor 33 Mix, is essentially a mixture of tetraethyl lead and methylcyclopentadienyl manganese tricarbonly. About 0.05 gm of manganese for each milliliter of tetraethyl lead is reported to add up to three octane numbers to the most responsive fuels.

THE HAZARD to public health will not be increased by adding four instead of three cubic centimeters per gallon of lead to gasoline, if certain precautionary measures are taken, according to a committee of advisors whose various views were made public recently.

HIGH PURITY tungsten metal is being captured from a mixture of gases and simultaneously formed into simple shapes by metallurgists at Bureau of Mines laboratories in Rolla, Mo. The product is 99.99% pure, it is reported. It should be possible to plate high purity tungsten onto various surfaces, extending the metal's usefulness.

LEAD applications ranging from the 500-ton lead shielding on the N.S. Savannah, a lead loaded plastic coating applied to fabric and used to absorb sound waves, earplugs made of lead, high speed soldering for printed circuits and an apartment building with lead glazed pottery walls are featured in Volume 23, No. 3 issue of Lead, publication of the Lead Industries Association.

BORATES to be used for plant food in the midwestern and northeastern U.S. and eastern Canada are being given a promotional assist by James C. Britton, agronomist in plant food development department of U.S. Potash Co.

A SIMPLER METHOD of producing commercial grade tungsten and molybdenum powders for use in alloys, especially steels, is reported by the Bureau of Mines laboratories at Reno. The method, known as fused-salt-bath electrolysis, has been tested successfully on scheelite and produced molybdenum of 98% purity and tungsten of better than 99%.

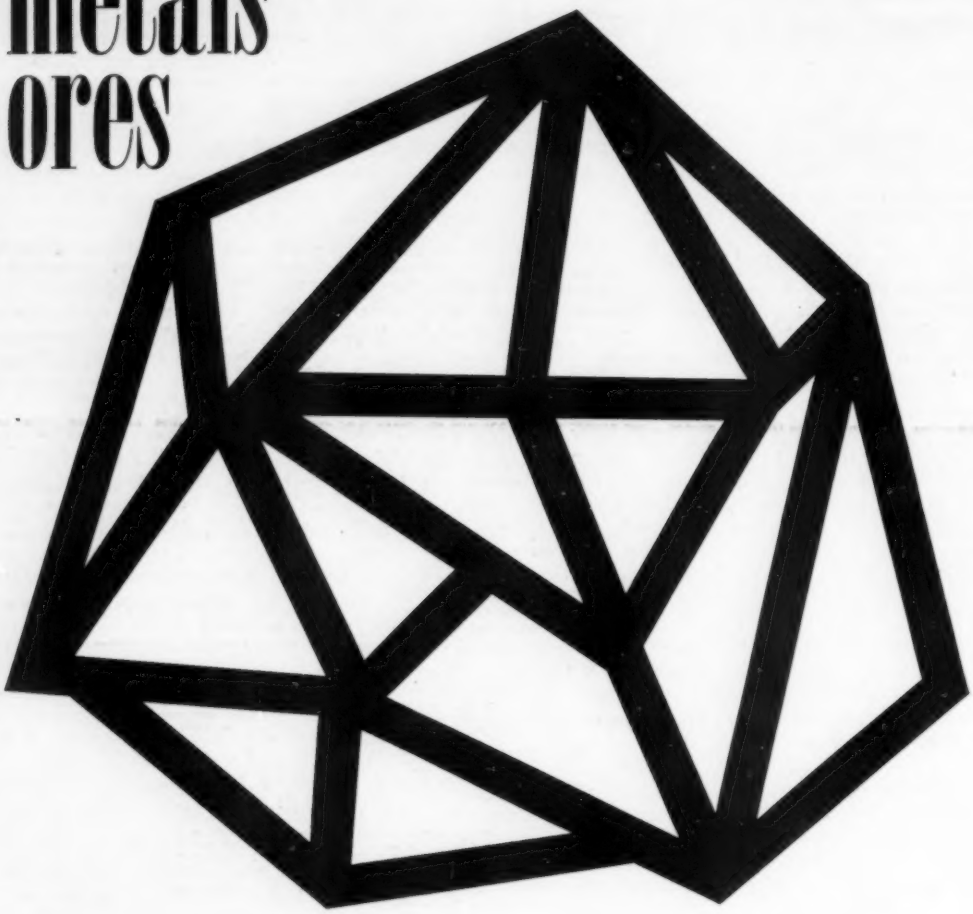
BATTERIES with silver-zinc primaries and secondaries and silver-cadmium secondaries are now available in a complete line from 0.1 to 200 amp-hr, announced Yardney Electric Corp. (see Trends, June 18). The company also reports a compact silver-zinc battery capable of delivering 80 watt-hr per lb — highest energy output yet achieved by a storage battery.

COMMERCIAL CADMIUM of greater purity is being turned out by American Smelting & Refining Co. During the last year, it is reported, one plant consistently checked out at 99.99-plus % pure cadmium.

PURE ARSENIC is moving into prominence as a semiconductor material following selenium and germanium. Currently, interest is focused on III-V compounds of the periodic table such as gallium arsenide, reports American Smelting & Refining Co. in News and Progress in Metals.

BISMUTH AND TELLURIUM are gaining importance as possible components for no-moving-parts refrigeration, air conditioning and many other heating-cooling devices. When two dissimilar metals are joined and the junction heated an electric current will flow (as in a thermocouple). If the process is reversed and a current is made to flow through the junction a heat sink is formed — the junction absorbs heat. The process may create a new market for byproduct tellurium from gold telluride mining.

metals ores



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E&MJ QUOTATIONS

Daily Prices of Metals

Oct.	COPPER ELECTROLYTIC Domestic Refinery	Export Refinery	Europe c.i.f.	LEAD New York	LEAD St. Louis	ZINC (b) Delivered (a)	ZINC (b) East St. Louis	ALUMINUM Primary Pig 99.5% U.S. dest.	ALUMINUM Primary Pig 99.5% Export	TIN Straits New York
15	32.500	28.025	28.970	13.000	12.800	12.500	12.000	24.700	22.500	102.250
16	32.500	28.550	29.495	13.000	12.800	12.500	12.000	24.700	22.500	102.250
19	32.575	28.650	29.595	13.000	12.800	12.500	12.000	24.700	22.500	101.750
20	32.600	28.650	29.595	13.000	12.800	12.500	12.000	24.700	22.500	101.750
21	32.175	29.450	30.395	13.000	12.800	12.500	12.000	24.700	22.500	101.625
Averages	32.470	28.665	29.610	13.000	12.800	12.500	12.000	24.700	22.500	101.925
Calendar Wk. Avgs.										
Oct. 12-16	32.313	28.140	29.085	13.000	12.800	12.500	12.000	24.700	22.500	102.344

(a) Prime Western Zinc sold on delivered basis at centers where freight from East St. Louis exceeds one-half cent a pound.

The above quotations are our appraisal of the major United States markets, based on sales reported by producers and their agencies. They represent payments received by producers for the product. They are reduced to the basis of cash, New York or St. Louis, as noted. Prices in cents per pound.

Copper, lead and zinc quotations are based on sales for prompt and future deliveries; aluminum weighted average prices are based on estimated sales and announced prices; tin quotations are for prompt delivery only.

COPPER prices, domestic, in the trade are quoted on a delivered basis, that is, delivered at consumer's plants. Delivery costs vary with the destination. The above prices are net prices at the refineries; the average shipment cost is deducted in order to arrive at a refinery price. Beginning Jan. 2, 1957, the average differential between delivered and f.o.b. prices is taken as 0.400c per lb.

COPPER quotations, foreign or export, reflect prices obtaining in the open market and are based on sales in the foreign market reduced to the f.o.b. refinery equivalent, Atlantic seaboard. On f.a.s. transactions, eff. Jan. 2, 1957, we deduct 0.425c for lighterage, etc., to arrive at the f.o.b. refinery quotation.

COPPER, Europe, c.i.f., is the export refinery quotation with the addition of the lighterage figure 0.125c, and freight to main Continental ports, 0.82c.

COPPER quotations are for ordinary forms of wirebars and ingot bars. The premiums on special shapes, effective in some instances on deliveries beginning Sept. 1, 1955, are: Standard ingots 0.25c per pound; slabs 0.35c and up, cakes 0.6c and up, depending on weight and dimensions; billets 1.725c and up, depending on dimensions and quality. Discount on cathodes 0.125c to 0.15c per pound.

ZINC quotations reflect sales of the Prime Western grade as well as sales of other grades when sold on a Prime Western basis. (b) **Zinc premiums** . . . obtaining over Prime Western zinc in the East St. Louis market on the following grades, in cents per pound: **Selected 0.10c; Brass Special 0.25c; Intermediate 0.5c. High Grade** zinc sold on contract, delivered to the consumers' plants, commands a premium of 1¼c per lb, eff. Sept. 2, 1959, over the East St. Louis basis for Prime Western. **Special High Grade** premium or differential is 1½c per lb, eff. Sept. 2, 1959.

LEAD quotations are for the common grade, and are based on sales of domestically refined metal sold to domestic consumers. The differential on sales in the Chicago district is 15 points under New York; for California 20 points under New York; for New England add 7½ points to the New York basis. Corroding grade commands a premium over common lead of 10 points.

ALUMINUM quotations refer to primary pig 99.5% in cents per pound. The U.S. price is freight allowed to buyers' plant; it includes sales by Canadian producers. It is a delivered price but the buyer may arrange shipment and receive the standard freight allowance. The export price is the price at which U.S. primary producers sell c.i.f. (delivered) foreign ports. The quotations are weighted averages with the weights determined by the relative capacity of the producers. Ingot sales reduced to the pig price are included in determining the price. The premium on standard ingots is 2.1c per lb.

Note: The daily quotations for copper, lead and zinc are weighted averages of sales reported to *E&MJ*; weekly averages are arithmetical averages of the daily quotations; monthly averages are the arithmetical averages of the daily quotations.

Silver, Gold, and Sterling Exchange

Oct.	Silver N.Y.	Silver London	Sterling Exchange	London Gold (a)
15	91.375	80.250d.	280.7040	250s. 1¾d.
16	91.375	80.250d.	280.7780	250s. ¼d.
19	91.375	80.250d.	280.8280	249s. 11d.
20	91.375	80.250d.	280.8080	249s. 10¼d.
21	91.375	80.250d.	280.7560	249s. 11¼d.
Av.	91.375	—	280.775	—
Calendar Wk. Avgs.				
Oct. 12-16	91.375	—	280.775	(a) Open Market

The daily silver quotation reported by Handy & Harman, in cents and fractions of a cent per troy ounce, is the price paid by Handy & Harman in settlement for silver contained in unrefined silverbearing materials submitted to them for refining. It is determined on the basis of offers of bar silver .999 fine as made to Handy & Harman for nearby delivery at New York in regular suppliers in quantities sufficient to meet daily requirements, and it is usually one quarter cent below the price at which such offers are made.

The Treasury's purchase price of newly mined domestic silver was established at 90.5c per troy ounce, 1000 fine, effective on July 1, 1946 under an amendment to the Silver Purchase Act of July 6, 1939.

London silver quotations are in pence per troy ounce, basis .999 fine.

London gold quotations are per troy ounce, basis 1000 fine.

Sterling, in cents, noon buying rate for cable transfers as certified by the Federal Reserve Bank of New York, for customs purposes.

Aluminum Alloys Secondary Oct. 15-21

	Tons	Price/lb
No. 13	138	24.94c
No. 43	18	24.83c
No. 360	37	25.52c
No. 380		
1% Zn	562	23.77c
2% Zn		No Quote
3% Zn		No Quote

The secondary aluminum alloy prices are weighted average prices calculated from reports by secondary aluminum producers of the prices and quantities of their sales.

London Metal Exchange

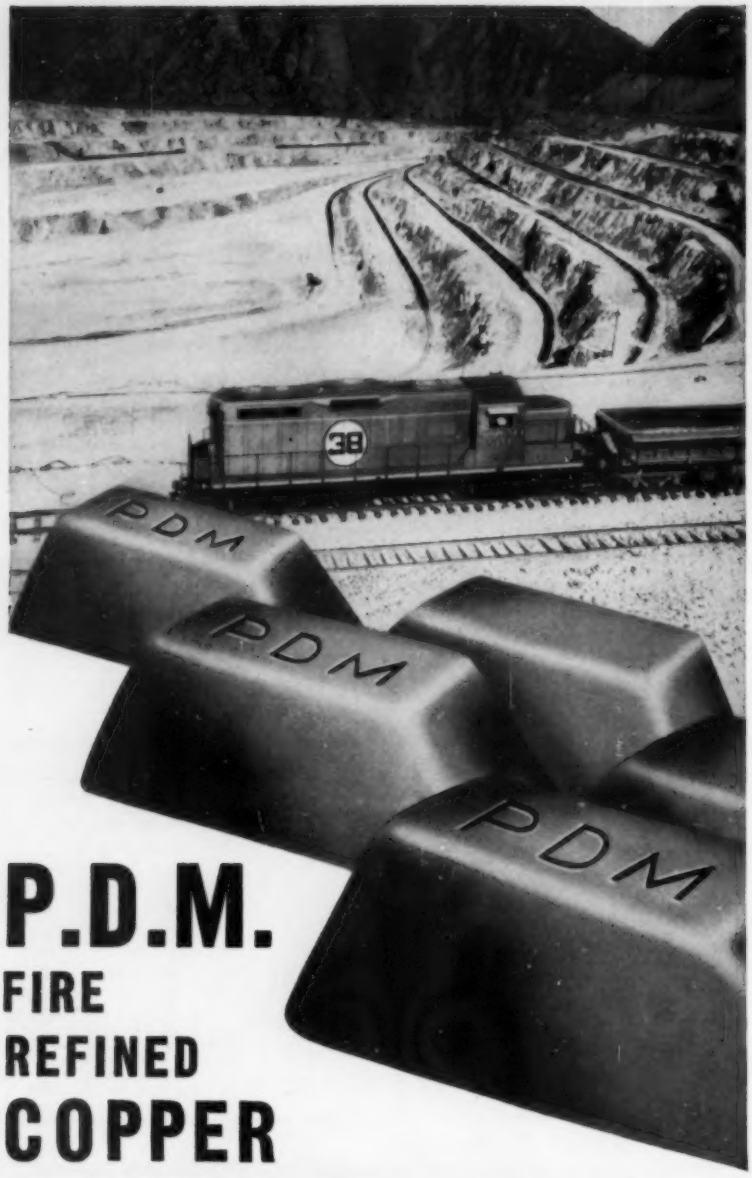
Oct.	COPPER Cash Bid	COPPER Cash Asked	COPPER 3 Mo. Bid	COPPER 3 Mo. Asked	LEAD Current Month Bid	LEAD Current Month Asked	LEAD 3 Mo. Bid	LEAD 3 Mo. Asked	ZINC Current Month Bid	ZINC Current Month Asked	ZINC 3 Mo. Bid	ZINC 3 Mo. Asked	TIN Cash Bid	TIN Cash Asked	TIN 3 Mo. Bid	TIN 3 Mo. Asked
15	234½	234¾	234	234¼	69½	69⅝	71⅛	71⅜	90½	91	88	88¼	793½	794	793	793½
16	234	234½	233½	233¾	70½	70⅝	71⅜	71½	90½	90⅝	87⅞	88	793½	794	792½	793
19	235	235¼	234¼	234¾	70⅜	70½	71½	71⅝	91½	92	89	89½	794	794½	793½	794
20	240	240¼	237¼	237½	71	71¼	72⅛	72¼	94	94¼	90¾	91	794	794½	794	794½
21	243½	244	239	239½	71⅝	71¾	72½	72⅝	96¼	97	93	93¼	794	794½	794	794½

Prices are for the official a.m. session in pounds sterling per ton of 2240 lb. Copper basis electrolytic and fire refined wire bars, lead 99.97%, zinc 98% and tin min. 99.75%.

THIS WEEK'S BUSINESS INDICATORS

	Latest Week	Preceding Week	Month Ago	Year Ago	Net Change Year Ago
Steel Rate (% of capacity in operation)	(d)13.1	(a)13.0	13.4	74.9	—61.8
Steel Ingot Production, thousands of tons	(d)371	(a)368	362	2,026	—1,655
Automobile Production (cars and trucks)	(d)164,786	(a)148,239	86,195	63,241	+101,545
Electric Power Output (millions kwh.)	13,086	13,234	13,109	12,067	+1,019
Engr'g Const. Awards, 4-week daily av., in thousands (c)	$48,967	76,463	63,330	54,681	—$5,714
Federal Reserve Index of Industrial Production (e)	147 Sept.	.....	149	138	+9
E&MJ Index of Nonferrous Metal Prices (e) (b)	122.5 Sept.	.....	119.0	107.4	+15.1
All Commodities, Bureau of Labor Statistics (e)	(a)119.6 Sept.	.....	119.1	118.9	+.7

(a) Revised. (b) Weights based on 1922-3-4. (c) From Eng. News-Record. (d) Preliminary. (e) Base period (100) is 1947-49



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Domestic Manganese Shipments Rise; Exports Somewhat Higher

Domestic mine shipments of manganese ore in June 1959 increased 68% over May to 26,000 short tons, according to the U.S. Bureau of Mines. Shipments of manganiferous and ferruginous ore were 136,600 short tons.

Imports of manganese ore containing 35% or more manganese totaled 211,575 short tons, an increase of 5% over May, as compiled by the Bureau of the Census. Of the total imports, Brazil supplied 28%, Ghana 25%, India 20%, Mexico 16%, and Portuguese Asia, Union of South Africa, Angola, Chile, Belgian Congo, Cuba, Peru, and Canada the remaining 11% in decreasing order. Imports of ferromanganese totaled 25,864 short tons of ore equivalent, a decrease of 4% from May.

Production of manganese alloys (ferromanganese, silicomanganese and manganese metal) decreased 14% from May to 88,504 short tons. Industrial stocks of ore showed a slight increase over those of the previous month.

Supply of manganese in the United States, 1955-59, in short tons:

	Dom. mines shipments	General Ore	Imports Ferro
1955	287,255	2,078,205	242,658
1956	344,735	2,238,568	488,436
1957	366,334	3,105,172	411,446
1958	323,108	2,452,578	170,712
1959:			
1st qtr.	71,300	587,587	53,670
Apr.	17,000	280,087	18,230
May	15,500	200,750	26,972
June	26,000	211,575	25,864

Smelters' Copper Scrap Prices

Custom smelters' buying prices for scrap, carload lots, refinery:

No. 1 copper and wire, 29c; No. 2 heavy copper, 25½c; light copper, 23¼c; refinery brass, 24½c.

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London Copper Prices

The following prices in £ sterling per long ton c.i.f. European ports are calculated by the London Metal Bulletin (see *M&MM* Feb. 13, 1958, p 3).

Oct. 12	231.130	Oct. 15	231.554
Oct. 13	230.838	Oct. 16	235.027
Oct. 14	231.327		
Av.	231.976		

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Brass and Bronze Ingot

85-5-5-5 (No. 115) 29¼c; 80-10-10 (No. 305) 33½c; 88-10-2 (No. 215) 37¾c; Yellow (No. 405) 25¾c; and upward. Manganese bronze (No. 420) 26¼c.

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Tri-State Concentrates

Joplin, Oct. 20, 1959

(a) *Blende*	*Per Ton*
Prime coarse (60% zinc)	$72
Flotation, 60% zinc	$72

(a) Effective Sept. 21, 1959

Galena	
Coarse and flotation, 80% lead	(a) $156.12

(a) Effective Aug. 24, 1959

Dealers' Scrap Prices

Dealers' buying prices, f.o.b. New York or equivalent freight points, for wholesale quantities, in cents per lb.

No. 1 copper wire	25–25½
Heavy copper & wire, mixed	23–23½
Light copper	21–21½
No. 1 composition	19–19½
Composition turnings	18–18½
Light brass	12–12½
Yellow brass turnings, mix	12–12½
Heavy yellow brass, mixed	13–13½
Auto radiators, unsweated	14–14½
Brass pipe, cut	15–15½
Rod brass turnings, No. 1	12½–13
Rod ends, brass	13–13½
New soft brass clips	15½–16
Cast aluminum, mixed	11–11½
Aluminum crankcases	11–11½
Aluminum clips, new soft	15–15½
Sheet aluminum, old clean	11–11½
Aluminum turnings, clean	6–6½
Zinc die cast, mixed	1½–2
Zinc die cast, new	3–3½
Old zinc	3–3½
New zinc clips	4½–5
Soft or hard lead	8½–9
Battery plates	4½–5
Babbitt mixed	9½–10
Linotype or stereotype	9–9½
Electrotype	8–8½
Solder joints close cut	13½–14
Block tin pipe	78–79
Autobearing babbitt	40–41
Monel Clips, new	30–32
Monel sheet, clean	26–28
Nickel, rod ends	52–54
Nickel, clippings	52–54

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Cadmium Oxide	Molybdenum Concentrates	Zinc
Cadmium Sulfide	Nickel Salts	Zinc Dust
Copper		Zinc Sulfate

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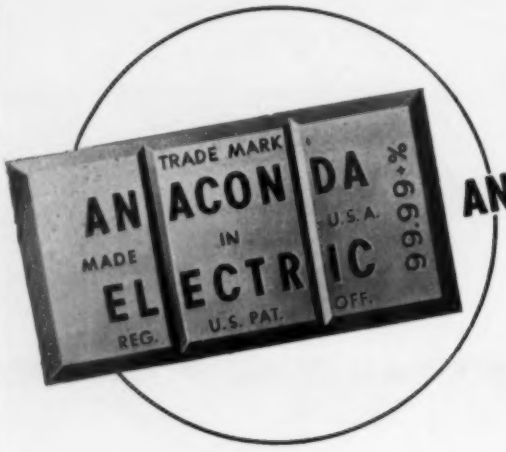

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2nd Quarter Platinum-Group Consumption Remain Above '58

Consumption of platinum-group metals in the United States in the second quarter of 1959, as indicated by sales to consuming industries, was 182,000 oz, 17% less than in the first quarter, but 49% greater than in the corresponding period of last year, according to the U.S. Bureau of Mines.

Sales of all metals except rhodium declined. Imports of platinum-group metals were 42% below those of the preceding quarter, but were 65% above those of the second quarter of last year.

Sales of platinum in the second quarter were 23% lower than in the first quarter with sharp declines recorded in all industrial categories except electrical, which showed a gain of 41% over the preceding quarter. Palladium sales dropped 12% below those of the first quarter with declines recorded in all consuming industries except jewelry and decorative, which showed a slight increase. Sales of the minor platinum-group metals, iridium, osmium, rhodium, and ruthenium together aggregated 9,800 oz, a drop of 14% below the preceding quarter. A gain of 21% in rhodium sales failed to offset sharp declines in sales of the other three metals.

Price quotations on platinum-group metals in the second quarter remained virtually unchanged as follows per fine troy ounce: Platinum, $75-$80; palladium, $18-$20; iridium, $75-$80; osmium, $70-$90; rhodium, $122-$125; and ruthenium, $55-$60.

Refinery production of platinum-group metals (new and secondary) in the second quarter dropped 19% to 45,000 oz. A 4% decline in working stocks of platinum-group metals held by refiners and dealers was due chiefly to a reduction in stocks of platinum.

Platinum refining (new and secondary) was down 37%, and imports of refined platinum were 43% lower than in the first quarter. Working stocks of platinum as reported by refiners and dealers declined 8%.

Lead Average (Monterrey)

The net price realized by the American Smelting & Refining Co. on all of its sales of Mexican pig lead, including metal sold for consumption in Mexico, during the week ended Oct. 17, 1959, was 8.92c (U.S. per lb. f.o.b. refinery) Monterrey, Mexico.

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A Custom Smelter Copper Price October 15-21

The following prices are computed by *E&MJ Metal and Mineral Markets* from data on flat price and average price sales reported by the American Smelting & Refining Co. They refer to electrolytic copper in standard shapes.

Delivered consumers' plants 32.625c
F.O.B. refinery 32.225c

They are for sales in the U. S. market and are adjusted to the nearest one-eighth cent. A one-quarter cent deduction for selling commission has been made.

N.Y. Commodity Exchange

	COPPER					LEAD				ZINC				TIN			
	Oct.		Dec.			Oct.		Dec.		Oct.		Dec.		Oct.		Dec.	
Oct.	Bid	Asked	Bid	Asked	C	Bid	Asked	Bid	Asked	Bid	Asked	Bid	Asked	Bid	Asked	Bid	Asked
15	31.58	31.58	31.13	31.13	328	11.40	11.50	11.51	11.60	11.52	11.60	11.68	11.68	101.375	102.375	101.500	102.375
16	31.60	31.60	31.18	31.18	340	11.55	11.65	11.70	11.70	11.60	11.60	11.75	11.75	101.250	102.375	101.250	102.375
19	32.15	32.15	31.61	31.61	360	11.50	11.60	11.60	11.65	11.71	11.80	11.85	11.85	101.000	102.125	101.000	102.125
20	32.81	32.81	32.17	32.17	530	11.58	11.70	11.70	11.70	11.90	12.00	11.90	11.90	101.000	102.125	101.000	102.125
21	32.98	32.98	32.47	32.47	495	11.70	11.85	11.80	11.85	11.90	12.00	12.01	12.01	101.000	102.125	101.000	102.125

Closing quotations on the N.Y. Commodity Exchange in cents per lb. C is number of contracts traded for the seven months of the year for which the Exchange accepts trading. Each contract is for 25 tons. Where bid and asked prices are the same, closing quotation was one at which transactions occurred.